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Gibberellin insensitivity; gai; plant growth inhibition; dwarf phenotype; lodging resistance; increased yield; flowering regulation; bolting inhibition; spinach; lettuce; antibody; identification; probe; primer; antisense; sense; expression regulation; co-suppression; rice; Bakane disease resistance; ss.
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Nucleic acid encoding gibberellin inhibitor GAI and related antisense sequences - used to create tall, or particularly, plants, especially crops such as maize, rice and wheat

English 2; Fig 3; 76pp; Claim

insersitivity (gai) gene product (GAI), the expression of which insersitivity (gai) gene product (GAI), the expression of which inhibits plant growth. However the inhibition is antagonised by gluberallin (GA), while gai expression confers a dwarf phenotype that is insensitive to GA, Manipulating gai and GAI expression confers a dwarf phenotype produce tall or dwarf plants, particularly the latter for increased testification of flowering, i.e., plants remain in the vegetative state until treated with GA, useful to inhibit bolting in spinach and elettuce. GAI can be used to raise specific antibodies for identifying homologous proteins or genes in other species. gai fragments can also be used as probes or primers to identify and colone related sequences, or in the preparation of antisense or sense expression regulating (co-suppressing) sequences. Rice plants: that express GAI may be resistant to Bakane disease. Manipulation of gai and GAI may be resistant to Bakane disease. Manipulation of gai and GAI may be resistant to tailor the degree of dwarfism present sequence encodes the Arabidopsis thaliana gibberellin to particular crops or situations GA sensitivity The and

575 T; 0 other; Sequence 1964 BP; 489 A; 426 C; 474 G;

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Plant transcription factor; phenotype; sugar sensing characteristic; transgenic plant; plant yield; growth; germination; photosynthesis; glyoxylate metabolism; respiration; pathogen response; wounding response; cell cycle regulation; plamentation; flowering; senescence; physiology; storage organ; metabolism; ss.
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cutors which may be used to modify phenotype associated with a plant solution and the cators which may be used to modify phenotype associated with a plant's sugar sensing characteristics and increasing yield when their expression level is altered. Sugars are central regulatory molecules that control aspects of physiology, metabolism and development. Therefore the cDNAs and proteins of the invention are useful for modifying the growth and gerniation rates of plants, photosynthesis, glyoxylate metabolism, respination, starch and sucrose synthesis, glyoxylate metabolism, respination, starch and sucrose synthesis and degradation, pathogen respination, starch and sucrose synthesis and degradation, pathogen respination as enescence of plants and for modifying sink source relationships in seeds, tubers, rooter regulation factor polynucleotides and polypeptides may be used to alter the structure and developmental characteristics of plants such as soybean, wheat, corn, potato, cotton, rice, oilseed, sunflower, alfalfa, sugarcane, turf, banana, blackberry, blueberry, strawberry, raspberry, cantaloupe, carrot, cauliflower, coffee, cucumber, eggplant, grapes, honey dew, lettuce, mango, melon, conion, papaya, peas, peppers, pineapple, spinach, squash, sweet corn, cobacco, tomato, watermelon, roasecous fruits and/or vegetable brassicas.
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for altering the biochemical characteristics
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cDNA, a homologue of G307. The transcription factor is used for altering a plant's biochemical characteristics. The transcription factor may be used to alter the structure and developmental characteristics of plants such as soybean, wheat, corn, potato, cotton, rice, oilseed rape, sunflower, alfalfa, sugar cane, turf, banana, blackberry, blueberry, strawberry, raspberry, cartaloupe, carrot, cauliflower, coffee, cucumber, eggplant, grapes, honey dew, lettuce, mango, melon, non papay, peas, peppers, pineapple, spinach, squash, sweet corn, tobacco, tomato, watermelon, rosaceous fruits and/or vegetable brassicas. Transcription factors are key controlling elements of biological pathways and altering expression levels of lor more transcription factors can change entire biological pathways in an organism. Therefore manitulating transcription factor levels in plants offers great potential in agricultural useful in gene therapy 88888888888888888888

Sequence 1951 BP; 482 A; 419 C; 475 G; 575 T; 0 other;

ö 206 193 266 253 cggaaatggctgatgttgctcagaaactcgagcagcttgaagttatgatgtctaatgttc 386 506 146 553 626 613 989 673 733 806 cggaaatggctgatgttgctcagaaactcgagcagcttgaagttatgatgtctaatgttc 373 Gaps atcctaagcagtcctaaccgatccccgaagctaaagattcttcaccttcccaaataaagc atcttaaagctattcccggtgacgcgattctcaatcagttcgctatcgattcggcttctt acacgtggcttgattctatgctcaccgaccttaatcctccgtcgtctaacgccgagtacg acggcgtcgtggaaaccaccacagcgacggctgagtcaactcggcatgttgtcctggttg acggcgtcgtggaaaccaccacagcgacggctgagtcaactcggcatgttgtcctggttg agaaggagaatctgactgtggcggaagctctggtgaagcaaatcggattcttagctgttt DB 22; Length 1951; ; 0 17; Indels 97.1%; Score 1907.8; 99.1%; Pred. No. 0; 0; Mismatches Best Local Similarity 99.1 Matches 1918; Conservative Query Match 27 87 147 134 207 254 314 374 507 464 194 267 327 387 447 434 267 554 627 614 687 674 747 g ò QQ õ QQ δy Dp ŏ q ò qq οy QQ οý Q ò g ò Dp δ g ŏ

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Qy	1227	gctaacactttagctgatcttgatgcttcgatgcttgagcttagaccaagtgagatt
qa	1214	ggotaacacitttagctgatcttgatgcttcgatgcttgagcttagaccaagtgagat
Qy	1287	atctgttgcggttaactctgttttcgagcttcacaagctcttggggacgacctggtgcg
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The present sequence encodes the Arabidopsis thaliana gibberellin insensitivity (gai-di) gene product (GAI-di), the expression of which inhibits plant growth. However the inhibition is antagonised by gibberellin (GA), while gai expression confers a dwarf phenotype that is insensitive to GA. Manipulating gai-dl and GAI-dl expression can produce tall or dwarf plants, particularly the latter for increased resistance to lodging and increased yield. It may also allow regulation of flowering, i.e. plants remain in the vegetative state until treated with GA, useful to inhibit bolting in spinach and lettuce. GAI-dl can be used to raise specific antibodies for identifying homologous proteins or genes in other species. Gai-dl fragments can also be used as probes or primers to identify and clone related sequences, or in the preparation of antisense or sense expression regulating (co-suppressing) sequences. Rice plants that express GAI-dl may be resistant to bakane disease. Manipulation of gai-dl and GAI-dl may be resistant to bakane callow.
Nucleic acid encoding gibberellin inhibitor GAI and related antisense sequences - used to create tall, or particularly, plants, especially crops such as maize, rice and wheat
                                                                                                                                                                                                                                                                                                                                 Gibberellin insensitivity; gai-di; plant growth inhibition; dwarf phenotype; lodging resistance; increased yield; flowering regulation; bolting inhibition; spinach; lettuce; antibody; identification; probe; primer; antisense; sense; expression regulation; co-suppression; rice; Bakane disease resistance; ss.
                                                                                                                                                                                                                                                                                                    Arabidopsis thaliana gibberellin insensitivty gene gai-dl
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inspiration sequence with a national sequences in the pression of which inhibits plant growth. However the inhibition is antagonised by gibberallin (GA), while gal expression confers a dwarf phenotype that is insensitive to GA. Manipulating gal-d2 and GAI-d2 expression can produce tall or dwarf plants, particularly the atter for increased resistance to lodging and increased yield. It may also allow regulation of flowering, i.e. plants remain in the vegetative state until treated with GA, useful to inhibit bolting in spinach and lettuce. GAI-d2 can be used to raise specific softidentifying homologous proteins or genes in other species. Gal-d2 fragments can also be used as probes or primers to identify and clone related sequences, or in the preparation of antisonse or sense expression regulating (co-suppressing)
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                                                                                            thaliana gibberellin insensitivty gene gai-d2.
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insensitivity (gai-d4) gene product (GAI-d4), the expression of which inhibits plant growth. However the inhibition is antagonised which inhibits plant growth. However the inhibition is antagonised by dibberellin (GA), while gai expression confers a dwarf phenotype that is insensitive to GA. Manipulating gai-d4 and GAI-d4 expression can produce tall or dwarf plants, particularly the latter for increased resistance to lodging and increased yield. It may also allow regulation of flowering, i.e. plants remain in the vegetative state until treated with GA, useful to inhibit bolting in spinach and lettuce. GAI-d4 can be used to raise specific antibodies for identifying homologous proteins or genes in other species. gai-d4 fragments can also be used as probes or primers to identify and clone related sequences, or in the preparation of antisense or sense expression regulating (co-suppressing) sequences. Rice plants that express GAI-d4 may be resistant to Bakane disease. Manipulation of gai-d4 and GAI-d4 makes it possible to the control of the degree of dwarfism and GA sensitivity to particular crops Bakane crops Arabidopsis thaliana gibberellin present sequence encodes the 6g; 76pp; English Fig ' situations Claim 18; The

BP; 405 A; 360 C; 423 G; 454 T; 0 other; Sequence 1642

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insersitivity (gai-d3) gene product (GAI-d3), the expression of which inhibits plant growth. However the inhibition is antagonised which inhibits plant growth. However the inhibition is antagonised by gibberallin (GA), while gai expression confers a dwarf phenotype that is insensitive to GA. Manipulating gai-d3 and GAI-d3 and CAI-d3 in the cogetative state until treated with GA, useful to inhibit bolting in spinach and lettuce. GAI-d3 can be used to raise specific in spinach and lettuce. GAI-d3 can be used to raise specific in spinach and lettuce. GAI-d3 can be used as probes or primers to identify and clone related sequences, or in the preparation of intiense or sense expression regulating (CO-suppressing) sequences. Rice plants that express GAI-d3 maye be resistant to Bakane disease. Manipulation of gai-d3 and GAI-d3 mayes it possible to tailor the degree of dwarfism and GAI-d3 makes it possible to
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DB 18; Length 1636;

Score 1556.4; Pred. No. 0; 0; Mismatches

79.28;

Conservative

Best Local Similarity Matches 1635; Conserv

59

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119 61

Query Match

58;

Indels

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Plant transcription factor; phenotype; sugar sensing characteristic; transgenic plant, plant yield; growth; germination; photosynthesis; glyoxylate metabolism; respiration; pathogen response; wounding response; cell cycle regulation; pigmentation; flowering; senescence; physiology;
aaaccggagattttcactgtggttgagcaggaatcgaaccataatagtccgattttctta
                         cacaagctcttgggacgacctggtgcgatcgataaggttcttggtgtgggggatcagatt
                                                                                                                                                                                                                                                                                                                                                                 A. thaliana transcription factor G308 homolog, G307 cDNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product= "Transcription factor homolog"
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
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17-APR-2000; 2000US-0197899.
22-AUG-2000; 2000US-0227439.
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HEARD J.
PINEDA O.
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The patent relates to polynucleotides encoding 35 plant transcription factors which may be used to modify phenotype associated with a plant's sugar sensing characteristics and increasing yield when their expression level is altered. Sugars are central regulatory molecules that control aspects of physiology, metabolism and development. Therefore the control aspects of physiology, metabolism and development. Therefore the control captories of the invention are useful for modifying the growth and germination rates of plants, photosynthesis, glyoxylate metabolism, respiration, starch and sucrose synthesis and degradation, pathogen respiration, starch and sucrose synthesis and degradation, pathogen response, wounding response, cell cycle regulation, pigmentation, flowering and senescence of plants and for modifying sink-source relationships in seeds, tubers, roots, and other storage organs leading to an increase in yield. The transcription factor polynucleotides and polypeptides may be used to alter the structure and developmental characteristics of plants such as soybean, wheat, corn, potato, cotton, rice, oilseed, sunflower, alfalfa, sugarcane, turf, banana, blackberry, blueberry, strawberry, raspberry, cantaloupe, carrot, cauliflower, coffee, cucumber, eggplant, grapes, honey dew, lettuce, mango, melon, conion, papaya, peas, peppers, pleaspple, spinach, squash, sweet corn, tobacco, tomato, watermelon, rosaccous fruits and/or vegetable brassicas.
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Pred. No. 1.2e-260;
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Samaha R;
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Best Local Similarity
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PILGRIM M.
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                             The present sequence is Arabidopsis thaliana transcription factor, 6307 cDNA. The transcription factor is used for altering a plant's biochemical characteristics. The transcription factor may be used to alter the structure and developmental characteristics of plants such soybean, wheat, corn, potato, cotton, rice, oilseed rape, sunflower,
                                                                                                                         transcription factor polypeptides, u. characteristics of plants e.g. corn,
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/product= "Transcription factor, G307"
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CREELMAN R.
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for altering the biochemical
potato and cotton plants -
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17-APR-2000; 2000US-0197899.
22-AUG-2000; 2000US-0227439.
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Pineda O,
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P-PSDB; AAE01892.
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PILGRIM M.
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(HEAR/) H
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      blackberry, blueberry,
alfalfa, sugar cane, turf, banana,
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                                                                                                                              1764;
                                                                                                                                             111;
                                                                                                                             Length
                                                                                                                                               Indels
                                                                                                     T; 0 other;
                                                                                                                           Score 915.8; DB 22;
Pred. No. 1.2e-260;
); Mismatches 312;
                                                                                                                                                                                                                                                                                                                                                                       gattctcaatcagttcgctatcgattcggcttcttcgtcta---
                                                                                                     G; 502
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                                                                                                    Sequence 1764 BP; 431 A; 383 C; 448
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74.8%;
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                                                                                                                                     Similarity
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Best Local Simi
Matches 1254;
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dwarf plant; crucifer; ss.
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plant development; dwarf
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Brassica napus

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The present sequence encodes a wild type plant protein of the GRAS family. The specification describes a mutant allele of the BZH gene, which contains a G1695A mutation resulting in the mutation E346K in the protein. GRAS proteins are transcription factors implicated in regulation of the response to gibberellins and thus in control of morphogenesis and plant development. The mutant GRAS protein is used to produce dwarf plants, specifically crucifers. Dwarf plants may be sown earlier (increasing nitrate accumulation without risking excessive stem growth during winter), and have better resistance to cold and lodging. They are also easier to harvest and allow for better
                                                                                                                                                                                                                                     Tanguy
                                                                                                                                                                                                                                                                                                           mutant nucleic acid encoding modified GRAS family protein,
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                                                                                                                                                                                                                                     Froger
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                                                                                                                                                                                                                                      Brunel
                                                                                                                                                                                                      (INRG ) INRA INST NAT RECH AGRONOMIQUE
          Location/Qualifiers 60..1778 /*tag= a /product= "GRAS"
                                                                                                                                                                                                                                                                                                                                                        Example 1; Page 13-15; 28pp; French.
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                                                                                                                                                                                                                                                                                                                            produce dwarf transgenic plants
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     monitoring of the crop.
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                                                                                                                                                                                  protein; BZH gene; transcription factor; gibberellin; morphogenesis;
t development; dwarf plant; crucifer; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        family. The mutant allele of the BZH gene contains a G1695A mutation resulting in the mutation E946K in the protein. GRAS proteins are transcription factors implicated in regulation of the response are gibberellins and thus in control of morphogenesis and plant development. The mutant GRAS protein is used to produce dwarf plants, specifically cucifers. Dwarf plants may be sown earlier (increasing nitrate accumulation without risking excessive stem growth during winter), and have better resistance to cold and lodging. They are also easier to
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Pred. No. 2.2e-249;
0; Mismatches 332; Indels
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                                                                                                                                                                                                                                                                                                                                                                                                                                              nucleic acid encoding modified GRAS family
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                                                                                                                                                               sequence of a mutant GRAS protein.
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Best Local Similarity 74.5%;
Matches 1179; Conservative C
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P-PSDB; AAB31884.
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wild-type, the dwarfing being gibberellin-insensitive. Taller plants may be made by knocking out Rht or the relevant homologous gene in the plant of interest. Plants may be made which are resistant to compounds which inhibit gibberellin biosynthesis, such as paclobutrazol, e.g. to allow use of a gibberellin biosynthesis inhibitor to keep weeds dwarf but let crop plants grow tall. The present sequence represents the maize lal genomic clone sequence.
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compounds which inhibit gibberellin biosynthesis, such as paclobutrazol, e.g. to allow use of a gibberellin biosynthesis inhibitor to keep weeds dwarf but let crop plants grow tall. The present sequence represents the wheat Rht clone C15-1 CONA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ttcaagggaagaaagagttcatgtcattgatttctctatgagtcaaggtcttcaatggc 1058
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                                                                                                                                  Length 1768;
 may be made which are resistant
                                                                                                                                                               Indels
                                                                                      BP; 368 A; 595 C; 527 G; 278 T; 0 other;
                                                                                                                                                               Mismatches 417;
                                                                                                                                Score 381.8; DB 20
Pred. No. 2.4e-102
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The specification describes polypeptides encoded by the Rht gene (and growth of the plant. This growth inhibition is antagonised by gibberellin. The products can be used to provide Rht expression in plants, conferring a dwarf phenotype on a plant which is correctable by treatment with gibberellin. In addition, the products can be used to provide Rht mutant plants which are dwarfed compared with wild-type, the dwarfing being gibberellin-insensitive. Taller plants may be made by knocking out Rht or the relevant homologous gene in the plant of interest. Plants may be made which are resistant to compounds which inhibit gibberellin biosynthesis, such as paclobutrazol,
                                                                                                                                                                 1709
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                                                                                                                                                                                  New Triticum Aestivum polynucleotides - encode a polypeptide which provides inhibition of the growth of plants, which inhibition is antagonised by gibberellin, used to confer a dwarf phenotype
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Rht gene; homologue; Triticum aestivum; wheat; growth inhibition; antagonist; gibberellin; dwarf phenotype; gibberellin biosynthesis;
 --tgtaccgagtggtcaagacaaggtcatgtcggagg
                                                                                                              gtcatgaaacgttgagtcagtggaggaaccggttcgggtctgctgggtttgcggctgcac
                          941 tetcateggggggtgctgctgctgctgccgccggcacggaccaggtcatgtccgagg
                                                                                                                                       1061 gccacgagacgctgggccagtggcggaaccggctgggcaacgccgggttcgagaccgtcc
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P-PSDB; AAY02540.
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e.g. to allow use of a gibberellin biosynthesis inhibitor to keep weeds dwarf but let crop plants grow tall. The present sequence represents the wheat Rht clone 5al genomic sequence.
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                                                                                                             2125;
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                                                                                                          19.4%; Score 381.8; DB 20;
llarity 60.0%; Pred. No. 2.6e-102;
Conservative 0; Mismatches 417;
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